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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,404	09/25/2006	Guy M. Besson	19.106011	5597
38732 7590 07/08/2011 CYTYC CORPORATION CarolAnn Mahoney, Sr. IP Paralegal 250 CAMPUS DRIVE MARLBOROUGH, MA 01752				
EXAMINER NGUYEN, HIEN NGOC				
ART UNIT 3777		PAPER NUMBER		
NOTIFICATION DATE 07/08/2011		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

hologicpatentgroup@hologic.com

Office Action Summary

Application No.

10/559,404

Applicant(s)

BESSON ET AL.

Examiner

HIEN NGUYEN

Art Unit

3777

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 29-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 29-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/05/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-940)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/21/2011 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 29-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nields et al. (U.S. 6,102,866), in view of Adler (US 6,778,850), further in view of Shmulewitz (US 5,664,573), Nishiki et al. (US 5,345,938) and Bauer et al. (US 5,488,951).

Nields discloses a system comprising:

- a breast immobilizing device (see abstract, col. 3, lines 25-40 and col. 5, lines 44-52).
- an x-ray source for producing a beam of x-rays that selectively rotating about a selected pivot axis, the beam irradiating a patient's breast positioned in the immobilizing device, the irradiating being along a multiplicity of different directions of the beam relative to the breast and taking, place while the breast remains immobilized (see col. 5, lines 44-52).
- an imager for detecting x-rays within the beam that have passed through the patient's breast to generate x-ray image, data describing a multiplicity of initial x-ray images related to multiplicity of directions along which the x-ray beam irradiates the breast (see col.5, lines 44-52 and lines 35-40).
- an ultrasound system for acquiring a pre-scan ultrasound image data of the breast, wherein at least one of an x-ray source exposure parameter or an x-ray source position is controllable in response to the pre-scan ultrasound image data (see Fig.1, element 100 is the ultrasound system for acquiring ultrasound images). Examiner interprets pre-scan ultrasound image data to be ultrasound image data acquire from an ultrasound scan before an x-ray scan. The system has a structure that is capable of

acquiring a pre-scan ultrasound image data and adjust x-ray according to the pre-scan ultrasound image data.

- the ultrasound system includes at least one ultrasound transducer that both emits and receives ultrasound signals and is at one side of the breast (see col. 3, lines 30-36 and Fig. 1, element 100). It is inherent that the transducer both emits and receives ultrasound signals in order to form an ultrasound image.
- ultrasound system includes at least two ultrasound transducers that are at opposite sides of the breast (see col. 11, lines 1-5). Nields discloses plurality of transducers. The system is capable of placing transducers at opposite sides of the breast.
- pivot axis is at a focal spot from which the x-ray beam emanates (see col. 5, lines 44-52).
- a processing system for processing the x-ray image data and the ultrasound image data and producing at least one processed x-ray image of the breast suitable for display and at least one processed ultrasound image suitable for display in which the processed x-ray image is a projection image (see col. 2, lines 1-5 and claims 5 and 6). The processor is processing x-ray and ultrasound image of the breast for display
- a display system for concurrently displaying the processed x-ray image and the processed ultrasound image in which the concurrently displayed processed x-ray and ultrasound images are at different orientations

relative to the breast (see Fig. 6, elements 62a for x-ray and 62b for ultrasound, element 60 is the display and col. 8, lines 17-42).

- the image detector and ultrasound system are located in the same housing (see col. 3, lines 25-40, col. 9, lines 15-20 and Fig. 5). The ultrasound head cover by the housing transmit and receive (detect) ultrasound signals to form an ultrasound images therefore the image detector of the ultrasound must be located in the same housing. Examiner interpret image detector as the signal receiving portion of the ultrasound system.
- the image detector and ultrasound system are selectably connectable (see col. 3, lines 25-40 and Fig. 5). The image detect is within the ultrasound head therefore it must be connected to the ultrasound system.
- a rotating x-ray source and a detector positioned to receive x-rays from the rotating source during an x-ray scan of the patient's breast (see col. 5, lines 44-52 and col. 6, lines 13-42).
- a driving mechanism, coupled to both the x-ray imaging system and the ultrasound imaging system for controlling movement of the x-ray imaging system and the ultrasound imaging system during x-ray image and ultrasound image acquisition; it is inherent that the system has a driving mechanism because the system is rotating and the driving mechanism cause this rotation.

- the system discloses by Nields is capable of having the x-ray scan follows the pre-scan.

Nields discloses combining x-ray and ultrasound imaging into an integrated system. However, Nields does not disclose taking ultrasound images before x-ray images and use ultrasound images to adjust the position of x-ray source. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Nields to adjust the x-ray source in response to the pre-scan ultrasound image data because the adjustment enable the scan to be more accurate. Adler discloses adjusting the beam source base on comparison between pre-surgical/pre-scan images and synthesizes images to improve the accuracy of the targeting beam (see claims 1 and 4). Shmulewitz discloses taking x-ray images after ultrasound imaging (see claims 11 and 12). Nishiki explicitly discloses a processor that couple to and control both x-ray source and ultrasound system to receive images and control the system (see Fig. 1, the controller is the processor and is capable of adjusting the x-ray source in response to the ultrasound images). Bauer discloses X-ray device is couple to ultrasound transducer and X-ray device follow the movement of the ultrasound transducer (see col. 2, lines 14-22). Adler, Shmulewitz, Nishiki and Bauer provide motivation reason to adjust x-ray source base on pre-scan ultrasound image data.

Response to Arguments

Applicant's arguments with respect to claims 1 and 37 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIEN NGUYEN whose telephone number is (571)270-7031. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Chen can be reached on (571) 272-3672. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 3777

/Tse Chen/

Supervisory Patent Examiner, Art Unit 3777